

XVII.—*Note on a Hermaphrodite Frog.*

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[Plate IX.]

LAST February my attention was called to an anomalous condition of the genital organs in a frog which was being dissected by a member of the practical class in this University (St. Andrews). The specimen was preserved for future examination, the results of which are now given.

Right Side.

The Müllerian duct was well developed and considerably convoluted. It possessed a small uterine dilatation, an opening into the body-cavity, and was slightly pigmented here and there. The ureter expanded to form a vesicula seminalis, though this was hardly so well developed as in the male frog at this period. The ureter and Müllerian duct were bound together near the cloaca by some connective tissue, but possessed separate openings into the cloaca. The genital gland was a well-developed testis. On the side furthest from the vena cava and about one third of the distance from the anterior end a small pigmented patch was seen, containing two white specks (Pl. IX. fig. 1, *). Sections through the gland showed that this pigmented portion contained a single normal ovum (Pl. IX. fig. 2, *ov.*), whilst the rest of the gland was purely male and showed no traces of ova either normal or degenerate. Vasa efferentia were present, and some of them entered into close relation with the small pigmented ovarian patch (Pl. IX. fig. 2, *ef.*). The fat-body was well developed.

Left side.

The Müllerian duct was developed as in the normal female and was slightly larger than that on the opposite side. It possessed a well-marked uterine dilatation (Pl. IX. fig. 1, *ut.*). The ureter showed a small vesicula seminalis and bore the same relations to the Müllerian duct as its fellow on the opposite side. The genital gland from external appearance was an unmistakable ovary, though in size it was slightly smaller than in the normal females which were dissected at the same time. At about the middle of the gland and on the side nearest the inferior vena cava was present a small yellowish patch, resembling the testis in its external appearance. Sections showed that this small patch consisted of testis tissue, containing, like the testis on the opposite side, nearly ripe

spermatozoa. The patch was almost isolated from the rest of the gland, and at one spot (Pl. IX. fig. 3, *ov.*) contained a well-developed ovum. It was also devoid of pigment except near its attachment to the main gland. The vasa efferentia entered into functional relation with it. With the exception of this small patch the gland consisted entirely of ovarian tissue containing ova up to .7 millim. in diameter. Vasa efferentia passed to it as well as to the small testis portion. The fat-body was well developed. Lastly, it should be mentioned that the male glandular enlargement on the fore foot was well marked on both sides.

One of the chief points of interest with regard to this specimen lies in the completeness of the hermaphroditic condition in the ducts, associated with a sharp distinction between the sexual characters of the glands. This is the more remarkable, as at the time the animal was killed (the middle of February) the breeding-season was not far distant, and yet neither gland appears to show any very marked preponderance over the other. Though on the whole the testis seems more developed than the ovary, it is possible that the peculiar sexual manifestation of activity in this specimen would, had life continued, have been determined by chance in the shape of the sex of the first frog which happened to cross its path.

A full bibliography on this subject is given by F. J. Cole in the *Anat. Anzeiger*, Bd. xi. (1895).

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EXPLANATION OF PLATE IX.

Fig. 1. Dissection of the generative organs, slightly enlarged. The upper portions of the kidneys are not shown. The Müllerian ducts have shrunk in the spirit and are not so thick as in the fresh state.

<i>fb.</i> Fat-body.	<i>t.</i> Testis.
<i>irc.</i> Inferior vena cava.	<i>ve.</i> Vasa efferentia.
<i>k.</i> Kidney.	<i>vs.</i> Vesicula seminalis.
<i>o.</i> Ovary.	<i>ut.</i> Uterine dilatation.
<i>ovd.</i> Oviduct.	* Ovarian patch on testis.
<i>ovdo.</i> Opening of oviduct.	† Testicular patch on ovary.
<i>r.</i> Rectum.	

<i>Fig. 2.</i> Section through the o	ii patch on the testis. × 30.
<i>bv.</i> Blood-vessel.	<i>pg.</i> Pigment.
<i>do.</i> Degenerate ovum(?).	<i>st.</i> Seminal tubules.
<i>ov.</i> Ovum.	<i>ve.</i> Vasa efferentia.

Fig. 3. Section through the testicular patch on the ovary. × 30. Letters as in preceding figure.